

Code No: 55023

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, November - 2015

ELECTRONICS MEASUREMENTS AND INSTRUMENTATION

(Electronics and Communication Engineering)

Time: 3 hours

Max. Marks: 75

Answer any five questions
All questions carry equal marks

- 1.a) Classify different types of errors that occur during measurements and describe their sources and precautions to minimize them.
- b) Determine the Multiplier resistance on the 50V range of a DC voltmeter, which uses 300mA meter movement having internal resistance of 1.2Ω . [10+5]
- 2.a) Describe about the principle and working of Arbitrary waveform Generator Instrument.
- b) A trigger pulse is applied to the basic sweep using R and C for every 20 ms. Compute the amplitude of the voltage, V_0 across the capacitor when the trigger pulse is applied given values of $V_{cc} = 50\text{ V}$, $R = 600\text{ K}\Omega$, $C = 0.3\ \mu\text{F}$ [9+6]
- 3.a) Draw the block schematic of wave analyzer with its working principle and write the its applications in various fields.
- b) Calculate the value of a Minimum Detectable Signal (MDS) of a Spectrum analyzer with a NF of 25dB using 1 KHz 3dB filter. [8+7]
- 4.a) Explain how a Kelvin's double bridge can measure low resistances and derive the condition for balancing this bridge practically.
- b) Draw the schematic of Schering Bridge and derive the expression for unknown elements. [8+7]
- 5.a) Explain about various time delay lines used in vertical deflection section of a CRO.
- b) Describe the function of each of the following oscilloscope controls: [8+7]
i) Focus ii) Intensity iii) Sweep.
- 6.a) Explain the method of finding phase, frequency relationship of two waveforms using Lissajous figures.
- b) Draw and explain the operation of a sampling oscilloscope. [7+8]
- 7.a) Explain the construction, working principle and applications of LVDTs.
- b) Discuss the principle of operation of a i) Thermocouple and ii) Sensistor. [8+7]
- 8.a) Draw the Sketch and explain the principle and operation of Hotwire Anemometer for fluid flow measurement.
- b) Explain the block diagram of a standard Data Acquisition System and explain function of each block. [8+7]